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ALLIED GEOGRAPHICAL
Southwest Pacific Area

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GETTING ABOUT IN NEW GUINEA



4th April, 1943

ALLIED GEOGRAPHICAL SECTION
Southwest Pacific Area

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Published for the information of all concerned

By command of General MacARTHUR

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GETTING ABOUT IN NEW GUINEA

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INTRODUCTION

1. New Guinea is a primitive, hard country and a new world to men from overseas. You go there to fight a dangerous enemy, the Japanese. But they are not the only enemy. The country itself will fight you with all its forces—its mountains, swamps and forests, its heat and rain, its snakes, crocodiles, scorpions and lice, above all with its mosquitoes and its countless invisible army of disease germs. You must be forever on your guard against this silent enemy, your environment. It is relentless. If you relax, it will get you down.
2. But the native has got all these things pretty well beaten. He can live in the tropics, and not because he has a brown skin. It is partly because he has developed some immunities, but mostly because he has learnt how to live there. That is what you have to learn. And you should do better, for you have with you the advantages of science. You can expect to survive all dangers of the tropics if you learn and practise the rules.
3. And the environment is not unkind to those who know its secrets. It offers you all manner of materials for the taking. Your business is therefore not only to avoid its dangers, but to make it work for you.

4. In both these respects remember that your great ally is the native. He knows his country backwards—what to do and what not to do. You will do well to make him your friend and rely on him.

LOST IN THE BUSH

5. If you are alone and lost, make it your first aim to find some natives. (Only in the near neighbourhood of the enemy need you have any hesitation.) It is your best chance of coming out alive.
6. You are never quite lost in the bush unless you have absolutely no idea where to go. Keep your head; try to work things out; decide to make for somewhere; and keep going in that direction.
7. If your unit is not far away, make for where you think it should be.



*Where you think
it should be*

8. If you have no idea where it is, strike out in hopes of finding a native village. The best tip is to descend towards the coast, where the native population is generally thicker. Follow a stream down and it will get you there. Also you have a good chance of finding a village on the banks of the stream.

9. If you have to cross a range of hills, follow the spurs rather than the valleys. The gradient is better; the country is drier and more open; you may get a view; and you may find a track.

10. Try to keep your bearings. If you have no pocket compass, watch the sun.

In New Guinea during November, December and January, the arc of the sun is south of you. To find South, point **the hour hand**

of your watch to the sun; halfway between the hour hand and 12 on your watch is approximately South.

During April, May, June, July and August the arc of the sun is North of you. To find North, point **12 on your watch** to the sun; halfway between 12 on your watch and the hour hand is approximately North.

During the period of Daylight Saving Time, when the hour hand is arbitrarily pushed forward one hour, you must assume it to be one hour behind its actual position on your watch.

Observe, before ever you get lost, the direction of the prevailing daily wind. That may give you your clue.

11. Don't hurry; go deliberately. Mark your path by nicking tree trunks or breaking twigs. That will at least enable you to retrace your steps if you want to. It may also enable a native or a European search-party to find you.

12. If you come to an open space, climb a tree and get a view. You may see a village or the smoke of a garden fire. Take your bearings as best you can, and make for it.

13. Listen for the sound of chopping wood, the howl of a native dog, yodelling of a gardener at work, the thump of a drum. Go after them.

14. Every now and then raise your voice, shout, cooe. If you come to a clear space get a fire going and put some green leaves on it to make a column of smoke. If there are natives within sight or hearing they will come looking for you.

15. Above all, keep your eyes skinned for a track, and when you find one, follow it.



Eye skinned for tracks

FOLLOW THE TRACK

16. New Guinea is covered by a vast network of tracks. They lead to villages, gardens, fishing places, sago swamps. Even the wildest unpopulated country has its hunting trails. At one end or the other they lead to human habitation. You won't know which end. Best go downwards.
17. It is a huge country and sparsely populated. You may have to go a long way. But stick to the track. Don't strike off into the green.
18. The tracks are always single-file; the best are usually very bad; the worst almost invisible. Don't hurry. Use all your powers of attention to hold the track or you will suddenly find that you are off it.
19. If it seems to end abruptly have a good look round over fallen tree-trunks, etc.; you will probably pick it up. Don't lose sight of the place where it seemed to end, or you may never see it again.
20. Look for cuts in tree-trunks (the native likes to slash them); also for broken twigs (the native snaps them between finger and thumb as he passes).
21. If the track leads to a stream it may not cross directly. Search upstream and down for the continuation. If you can't find it, proceed along the stream itself. Use your judgment whether up or down.
22. Very often the track leads over the stones through the water for miles on end. Keep a sharp lookout on either bank for turn-offs.
23. If the track comes to a garden and nobody is there, then you have reached the wrong end of it. At the other end there is some habitation. It should not be more than a few miles away. But before you go back take a look round the garden fence, and if you find a more promising track, take that.

24. Sometimes you will find a couple of palm branches set up across the track, or a strip of bark stretched across it from tree to tree, or perhaps several spears stuck in the ground. These show that the track has been closed by the local natives. Shout and wait awhile. If no one comes, go forward. You are perhaps "getting warm."

MAKE USE OF THE NATIVE

25. When you reach a village, expect a friendly welcome from the natives. They will probably give you food and shelter and will guide you on your way. Appeal to the Village Policeman, the Luluai, or the headman. Make some small payment if you can. Otherwise give a "paper" for receipt.



*Don't mind
taking his
hand*

26. The native guide knows his country very well—tracks, passes, fords, camping places, etc. You have to take his word.

27. But he is not **always** trustworthy. He may merely want to get you away from his neighbourhood. Therefore, don't let him out of your sight. Don't let him leave till he has led you where he promised to lead you.

28. Listen to his advice in difficult country. He knows whether a stream or a swamp or a ravine is crossable, whether the sea is too rough for a canoe. If he says "No," you'd probably better not try.

29. But you must use your own judgment as well. If he says "Yes," remember that he can go places that perhaps you can't; also that he does not worry much about your gear and ammunition.

30. He is sure-footed and has a fine nerve. He is also anxious about your safety.

Don't mind taking his hand when crossing a log-bridge, fording a rough stream, or rounding a cliff-face. (He may even want to carry you across small streams to save your boots from getting wet.)

31. Allow friendly natives to walk in front of you on the track.

They have sharp eyes for pitfalls, snakes, hornets, and stinging plants. They will cut the lianas and thorny trailers. They like to do it.

32. Let your native guides make first contact with the next village. They will shout the news of your coming. If need be, let some of them go on ahead.

33. If friendly natives have gone on ahead they will close side tracks by laying branches across them. Follow the one they leave open.

TRAVELLING IN THE BUSH

34. Take your time. Don't blunder through regardless. Watch the ground or you will slip, stub your toe, or trip over a root. When you want to take a good look round (which should be very often) pause to do it.

35. The virgin bush is largely free of undergrowth, but has plenty of lianas and lawyer cane (see para. 73) with thorny trailers. Where gardens have been made previously, there will be a thick growth of bushes and small trees ("secondary growth"). In some parts you may meet dense masses of cane-grass, 10 ft. high. Don't tear your way through these obstacles. Go deliberately. Try first to push them aside. Cut with your scrub knife where necessary. Always cut on the slant.

CLIMBING MOUNTAINS

36. Take frequent breathers. When you are taking a longer spell, sit down. (Don't sit on the wet ground or a rotten log. Strip off some leaves and make a cushion.)

37. A strong walking stick or staff (lawyer cane or light sapling) helps. But beware of using it in moss forest; your stick may sink in 3 ft. and throw you off your balance.
38. Use your hands on small tree-trunks in climbing or descending, swinging from one to the other. For a party of men it may be worth setting up a "life-line" of lawyer cane over the steepest stretches.

CROSSING STREAMS

39. In fording streams let the native guide go first and show you the way. The ford is often at the downstream end of a smooth, deep stretch, i.e., where the water first breaks.
40. Don't fight unnecessarily against the current. Don't get down and lean against it. You make hard work of it. Keep your body out of the water as much as possible and be content to cross diagonally, downstream. You may keep your feet better if you carry some extra weight.
41. If the stream is swift, don't despise the help of a native. Post strong natives at intervals across it to help your carriers if they get into difficulties. Or stretch a lifeline of lawyer cane across. Or make a line of men holding poles, man to man.
42. New Guinea rivers can be dangerous. If you have to swim, it is wise to get a soft wood log, 4-5 ft. long, and ride it across, paddling with your hands.
43. You can usually make rafts (see paras. 51-6). Unless the stream is too wide attach a length of lawyer cane so that you can pull the raft back for the next journey across.
44. If there is tall timber on the bank you can fell a tree across the stream. The natives bridge streams in this way. Take their advice about the right tree.
45. There may be a log bridge over the stream already. If it looks alarming get a lifeline of lawyer cane run



Say your prayers

undignified, but it is better than falling off. There may be a long way to fall, with rocks underneath.

46. Natives are skilful at building cane bridges. One man must swim over first with a length of thin lawyer cane. He uses this to drag across the heavier cane for the bridge. A number of strands are bound together for the footwalk. These are made fast to trees on either bank. Handrails are provided in the form of further strands, laced at intervals to the footwalk. The whole structure is stayed with numerous strands from neighbouring trees. The best cane bridge will swing alarmingly. Go steadily. Keep your eye on your foothold and handhold alternately.



Straddle . . .

47. There are other kinds of native bridges, e.g., a short stretch may be spanned by a number of saplings laid across one by one and eventually bound together for strength.

CROSSING SWAMPS

48. Sago swamps are very difficult with mud, slush and dense thorny growth. But they are not deep. Lagoons and grass swamps, on the other hand, may take you out of your depth; you will probably need canoes and must have native guidance.
49. Natives have their own tracks through the swamp. Wading is unavoidable, but there may be some logs to walk on. These are often covered with muddy water and invisible. You have to feel your way. You will often find poles stuck upright in the mud beside the hidden logs. Use these in crossing, but don't pull them out. Leave them where they stand for the next man.
50. In sago and nipa swamps lop off midribs and lay them, several thick, as a corduroy. Worked out sago trunks (i.e., the bark shell from which the pith has been scraped out) make fairly strong bridges.

RAFTS

51. Rafts may be made of light softwood logs, bound with split lawyer cane: Several larger logs underneath with a decking of lighter logs, laid transversely. A semi-triangular form is favoured.
52. Bamboo is the best material because of its buoyancy. Suitable lengths, of the largest diameter obtainable, are bound firmly together in lieu of logs. The bamboo should be lightly notched to prevent the lashings from slipping.
53. Rafts are usually made fairly small, viz., to carry three men or equivalent load.
54. They are unstable. Pack your gear in the middle and be careful how you move about.
55. They are also unwieldy and cannot be used in rough water. Hug the banks in travelling downstream and keep your

ears pricked for the sound of rapids. If the current is getting too fast there is probably trouble ahead. Pull ashore and send forward to investigate.

56. Improvise paddles and have strong sticks for poling. A long length of lawyer cane trailing behind may be useful in controlling the raft when trouble threatens.

CANOES

57. Let the native be captain of his own canoe. He knows where it can go and how much it can hold. Never load it more heavily than he says. Rather load it less heavily. He doesn't much mind a capsized, and he doesn't mind if your gear gets wet.

58. See that you have bailers (tin, shell, coconut-shell, etc.) on board before you start. See also that you have enough paddles.

59. Don't put your gear in the bottom of the canoe, which will always have an inch or so of water. Lay some short sticks crosswise for a platform.



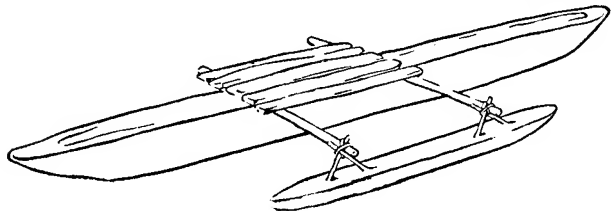
Sit very still . . .

60. If the canoe becomes waterlogged, get it into shallow water; get out; move it rapidly backwards and forwards. The water in the hull will then spill out at each end alternately.

61. In a single dugout (without outrigger) the native paddlers will stand. You will be well advised to sit, and, if it is a small dugout, to sit very still indeed.

62. A sago trunk from which the pith has recently been scraped provides a makeshift canoe.

63. You can make two single dugouts into a double canoe; cut out holes just below the upper edges, or lips, of both canoes for lashing; bind strongly to cross-pieces of hardwood; make a decking. The double canoe is a very stable craft; light; easy to paddle.
64. Outrigger canoes are of many types, from small river craft (plain dugout hull) to large seagoing vessels with built-up hulls. They sail with outrigger to windward; are steered by paddles; go about by shifting sheet and paddles to the opposite end. Natives are expert in their management.
65. With a following wind, sails may be improvised from native mats, or coconut fronds with leaves plaited. A plain palm branch held erect will help.
66. In the outrigger canoe the weight must be carried on or near the hull, not towards the outrigger-float. The float should be allowed to ride lightly. In a good wind it will often lift clear of the water, but fall back again either by its own weight or by one of the crew stepping towards it. If, however, it begins to sink because too much weight has been shifted towards it, it may be impossible to bring it up again. Nearly all capsizes occur on the outrigger side.
67. See that the pegs are firmly driven into the outrigger float before you set out. Natives are sometimes careless of this.
68. If you are capsized in a river or at sea, cling to the canoe unless you are fully certain that you can swim ashore.



SHELTER

69. Camp on a ridge if you want a cool breeze; under a ridge if you want shelter from a cold wind.
70. Avoid the immediate river bank. It may be damp and misty; undermined and ready to collapse; subject to flooding; haunted by crocodiles; infested by mosquitoes. The noise of the river may keep you awake or prevent you hearing the approach of an enemy.



*Don't even stand
there*

71. Avoid camping near dead trees. They creak badly and may fall down during the night. Don't make your bed under a coconut palm with ripe nuts. (Don't even stand there for a minute; you will notice a native never does so.)
72. A lean-to shelter can speedily be made with framework of saplings. Split cane or strips of bark from the trunks of young trees will do for lashing. Nipa and sago provide the best thatching; long grass is good; any broad leaves (especially of wild banana) will do. If laid on thick, with plenty of overlap, the thatching will be rainproof while it remains green. Windbreaks may be made of branches and leaves.
73. (Lawyer cane—also called lawyer vine and rattan cane—is the climbing palm. It grows from the ground to the upper branches of the tropical forest. You can haul it down in lengths of 100 ft. and more. It ranges in diameter from $\frac{1}{4}$ in. to 1 in. Makes a very strong rope. Should be split into ribbon-like form for lashing material.)
74. (Bark lashing material: Cut into the trunk of a smooth young tree deep enough to get hold of the inner bark. Tear off downwards as a long strip. Remove the outer bark, using only the inner. Twist and crumple to make it pliable.)

75. You can't take too much trouble over your sleeping arrangements. Make a thick mattress of leaves and twigs. Rig your mosquito net. Try to find a place free of ants. A raised flooring is readily made with strips of split bamboo or the bark of palms. Dig a shallow gutter on the uphill side of your shelter and carry it round both ends to run the rain off.

76. Collect some firewood for the night. Even in wet forest you can find something dry enough to burn. Go for dead wood that happens to be standing more or less upright, e.g., against the trunk of a tree. Smash it against the tree-trunk. Driftwood in the dry bed of a stream usually makes good firewood.

77. Native houses are likely to have fleas and other vermin, possibly disease-carrying. But they are free from ants, leeches and snakes, and they are warm and dry, above and below. Unless you are assured of good shelter elsewhere you will be wise to use the house.

VEGETABLE FOOD

78. The best thing you can do is to take a walk with a native (1) through his garden, (2) in the bush. Get him to **show** you the principal garden plants and the edible bush products. For further information see the pamphlet, "Friendly Fruits and Vegetables in the Jungle."

ANIMAL FOOD

79. Village pigs are good food for natives, and therefore good food for Europeans. (Do not be put off by the fact that they are scavengers.) As with all pork, the flesh must be very thoroughly cooked or you run the risk of internal parasites and possibly other infections. Village pigs must be bought.

80. Village pigs are nearly everywhere the same species as bush pigs, only domesticated instead of wild. They wander some miles from home. Boars are castrated and most village

pigs have brands of ownerships (slit ears, etc.). Do not shoot a pig near a village. It is probably privately owned.



Some . . . eat dog



81. Some tribes eat dog. If they do they will probably be willing to sell. Perfectly good food.

82. Bush pigs are hunted with dogs; by burning grass patches; by driving into pig-nets; by traps and pitfalls; by spearing the grass nests of littering sows, etc. If you help the hunters with your rifle they will be more than pleased and you will get a share. Remember, incidentally, that the boar is a highly dangerous animal. Have some extra shots in the magazine or be ready to shin up a tree.

83. Grass patches are burnt off yearly for hunting. Without a large number of men co-operating, these burnings would be useless. Do not set fire to grass yourself. You will get nothing and only annoy the native owners.

84. Cassowary, wallaby, tree kangaroo, bandicoot, cuscus, large snakes and lizards are all good eating. The best way to find them is to go hunting with the natives and their dogs. (The cassowary, when brought to bay or slightly wounded, is dangerous. He has sharp claws or nails, and he kicks.)

85. Look for wallabies in grass patches near water, early morning or evening.

86. Large lizards run up trees when disturbed. They will play possum on the far side of the trunk, where they can be stalked and shot.

87. Flying foxes (large bats) are fruit eaters and good food. They have special trees where they sleep by day, hanging

from the branches. To shoot them hanging is dead easy, but don't waste ammunition by shooting at them on the wing.

88. Snares and traps can be set where animals are known to feed, e.g., near fruiting trees or beside a hole in a garden fence.

89. Spring and Noose Trap: Bend over a sapling or strong pliant stick by means of a line fixed to a trigger-stick; noose to be attached to end of line as in fig. (a), or to sapling as in fig. (b).

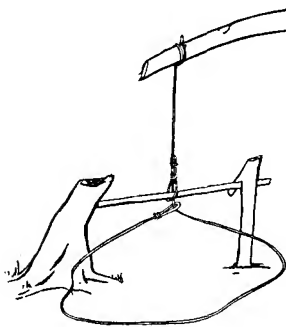


Fig. "a"

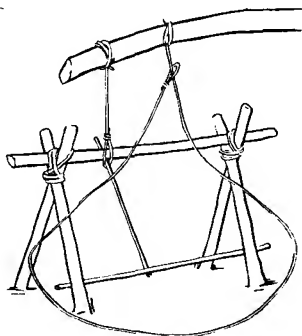
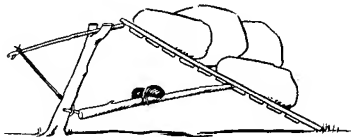


Fig. "b"

90. Trap for bandicoots, rats, ground birds, etc.: Sloping platform (weighted with stones), together with lever, line and peg, and trigger-stick. Bait (e.g., taro or fruit) to be attached to trigger-stick.



91. Crocodiles are edible, the bigger the tougher. Look for them on mud river-flats at low tide, or sleeping on logs beside the river. Shoot behind the shoulder. The natives know the haunts of the crocodiles near their villages.



Shoot 'em sitting

92. The main birds are pigeons (blue, black-and-white, goura), hornbill, cockatoo (white, black), scrub-hen, duck, and very many varieties of swamp bird. Best looked for in the early morning or towards evening. They are not man-shy in remoter parts. Get as close as you can and shoot them sitting. A shotgun with No. 3 shot is useful on patrol.

93. Scrub-hen nest: A large mound of humus, old leaves, etc., may be, say, 12 ft. across and 3 ft. high. Dig in this for eggs (pinkish brown and about twice the size of a hen's egg).

94. Crocodile eggs are found in grass nests beside rivers. Natives may know where to find them. Beware mother crocodile:



95. Large white grubs, found when chopping wood, are very good eating. Old sago palms are swarming with them. You can eat them raw if you are game.

Eat them raw

FISH

96. Fish can be shot with a .303. Sprinkle some crumbs on the surface of a river pool and shoot when the fish rise. One shot into a crowd of minnows in shallow water will probably stun some of them. (But don't ever fire with the muzzle under water. You may burst the barrel.) A hand grenade is very effective in deep water.

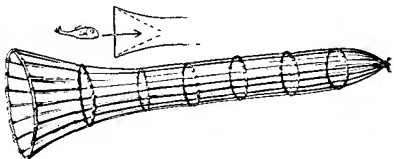
97. In a shallow stream divert most of the water with a barrier of stones, leaves, clay, etc., leaving a small backwater.

Later on block the open end of this. Bale out the water. You may succeed in catching a few small fish with your hands. Use a similar method with flood pools on the banks of streams. Make a barrier of leaves across the mouth of the pool; the retreating water filters through; the fish (if any) are left behind.

98. Make a narrow tubular trap of the

midribs of palm leaflets set close together. Make a barrier of twigs, leaves, stone, etc., across a small shallow stream. Set

the fish trap in this barrier, mouth upstream. The fish go in headfirst. Take a handful of leaves, suddenly block the entrance of your trap, and lift it out.



99. Make a fish spear by binding several prongs of sharpened palmwood to the end of the shaft. They

should be made to point slightly outwards. If fishing by night use a torch to make the fish rise.



100. The commonest fish poison is derris, or "New Guinea dynamite." This is cultivated and is found in many villages; a creeper with long pointed leaves, rather shiny: The roots (also stems and leaves) are crushed and pounded on a stone in a pool. The water goes pearly white and the fish rise to the surface, stupefied. This method can be used in salt water (pools on the beach or the reef). Wash your hands after handling derris.

101. Search for oysters on rocks and mangrove roots. Large crabs are found on the muddy banks of deltas.

COOKING

102. For boiling and stewing use the native earthenware pot. You can bring water to the boil in a bamboo tube by putting in red-hot stones.

103. Roast over the open coals (meat, yams, sweet potatoes, etc.). Small branches may be used as spits.

104. Bake food by wrapping in leaves and putting in the coals. Banana leaves are the best.

105. Hot stone method of cooking: Dig a small trough in the ground. Make a good fire alongside and put on plenty of stones, heating until nearly red hot. Have plenty of leaves ready (banana, grass or fern). Transfer hot stones to trough. Cover with leaves; place food on top of leaves and cover with more leaves; put hot stones on top; cover the whole thing with leaves. Cooking is complete in an hour or so. (Tongs for handling the stones may be improvised by bending a strip of bamboo double.)

FIREMAKING

106. The best tip is to keep your matches dry (they are difficult to strike in a damp climate). Use a quinine bottle with a good cork or screw top. A reliable cigarette lighter is handy. Be very economical with both matches and lighter. Keep your fire going all night, as the native does. A dash of kerosene helps to start a fire when the kindling is damp. (A few pieces of calcium carbide carried in an airtight tin are handy for the same purpose.)

"SAW-STRAP" METHOD:

107. Take a length of dry wood and split at one end, keeping the split open with a small wedge. Lay on the ground, with some dry inflammable leaves or soft bark underneath. Pass a ribbon of bamboo or split cane under the split stick.

Stand on the stick to hold it down. Saw rapidly with the bamboo ribbon. The wood dust should break into a glow, falling on the dry bark beneath. Blow very gently into a flame. This method is the quickest.

"PLOUGH" METHOD:

108. Take a short stick, say $\frac{1}{2}$ in. diameter, for "rubbing stick"; sharpen it to a point. Take a solid piece for the "base"; cut a shallow groove along the upper side of it. Kneel on one end of the base and get someone to hold the other end to keep it firmly on the ground. Grip the rubbing stick with both hands, one above the other, thumbs down. Rub rapidly back and forth, starting slow but accelerating rapidly, pressing hard and always pushing the wood-dust towards the end of the groove. When it begins to glow, blow it very gently into a flame. The "Plough" method is hard work; there is a knack in it; and you must have the right wood.

DRINKING WATER

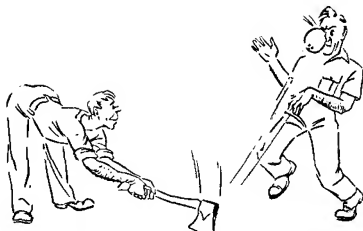
109. In unpopulated country running streams are almost certainly safe; still waters probably safe. In populated country you should take no risk, especially in war time. Boil.

110. If you have no means of boiling the water, take it (1) from above the village, (2) from midstream, (3) as far as possible from **under** the surface.

111. An unripe coconut gives you a long cool drink, very much like water. To climb a coconut tree (1) take your boots and socks off, (2) make a loose band to go round your insteps (with your belt, or a strong strip of bark or split cane), (3) grip the trunk with your hands (elbows pressing against it) and with the soles and toes of your feet (held together by the loop), (4) go up like a monkey on a stick. Break off or cut off the large unripe nuts. Let them fall.

112. To prepare a coconut for drinking chop the husk right off at the base, or stem-end, without breaking the inner shell.

There are three eye-holes at this end of the inner shell. Bore with the point of your knife. (After drinking the "milk" you can smash open the coconut and eat the soft "meat.")



You can smash it open

113. Lianas (heavy-stemmed creepers growing from the ground to the upper branches of the tropical forest) will give you a drink of water. Cut off a 3 ft. length and let the water drain down into your mouth. You can do the same with lawyer cane (para. 73).

114. At sea level you can nearly always get water by digging a few feet down.

115. Where water is scarce you should carry a supply. A length of thick bamboo with the nodes or notches knocked out is a good container.

116. Do not form a habit of drinking from every stream on the track. It grows. Keep your thirst for a mug of tea when you get in.

GENERAL HEALTH:

117. You cannot avoid hardships. But make yourself as comfortable as duty, the Japanese and the tropics allow. Don't crack hardy or you will crack up. Don't be a tough; be a bit of an old woman. It pays handsomely.

118. However tired, take trouble over your camping arrangements: cooking, shelter, mattress of leaves or grass, firewood for the night, etc.

119. By day your clothes will probably be wet through, with sweat if not with rain. It does not matter much because you are on the move. But try to keep something dry for the night.

120. Study your personal cleanliness. Wash your body often and your clothes when you get a chance to dry them. Carry some soap.

121. It is not pansy to use powder. Sprinkle your toes, your armpits and between your legs. Keep your armpits shaved.

122. Look after your feet in particular. Deal at once with blisters and sores (disinfectant and sticking plaster); and with tinea between the toes (use powder or ointment if you've got it). Don't go barefoot in muddy places near villages, or you will get hookworms. Wash and dry your feet when you get a chance. Keep a change of socks.

123. Venereal disease is common. You cannot expect treatment in the bush, and V.D. untreated may lead to serious complications.

124. When you are lucky enough to smell beer, don't make a welter of it. If you get tight, you will forget or disregard all the rules of tropical hygiene.

125. Obey the instructions given by your Medical Service and use faithfully the things they prescribe (quinine, chlorination tabs, salt, etc.). Take it all very seriously if you want to keep fit and survive.



CUTS AND SORES

126. Broken skin means trouble in the tropics unless dealt with immediately. A small scratch may turn into a sore that takes months

*Don't make a
welter of it*

to heal. It may even cause your death. The danger is immensely increased when there are corpses lying about. Dry the scratch thoroughly; then use iodine, Friar's balsam, or other disinfectant, right on the spot. Plaster or bandage.

127. For sores and wounds that require dressing, bathe with warm salt solution; or weak permanganate (pink, not red); or lysol (teaspoonful to a full pint). Dry off and then apply zinc or other ointment on dressing. Plaster or bandage. Do not disturb unnecessarily. Look at it morning and evening only.

128. For chronic ulcers, wash clean with disinfectant. Apply bluestone (by dipping the bluestone in water and allowing a drop or two to fall off it on to the ulcer). Dress and bandage firmly.

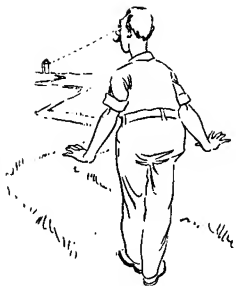
MOSQUITOES AND FEVER

129. All mosquitoes are a nuisance; and the malaria mosquito, or Anopheles, is nearly as dangerous as the Japanese. She (for it is only the lady who harms you) flies mainly at dusk and from dawn to 9 a.m. But she lurks in dark corners, even in the daytime, especially in native houses. Wear long trousers; roll down your shirt sleeves; use a mosquito veil if you've got it; always rig your mosquito net before dark. Don't take the mosquitoes in with you when you get under it. And don't conclude there are no mosquitoes because you hear no buzzing. The worst kinds don't sing.

130. Citronella will help protect your hands and face in the evenings. A dash of olive oil mixed with the Citronella makes it last longer. Make full use of your mosquito cream. The smoke of dry coconut shells and husks will keep most mosquitoes at a distance.

131. But in malarial country you will probably get the bug into your system despite all precautions. The thing then is to keep it under control. If you don't you will suffer from attacks of fever.

132. Attacks are especially likely in times of stress, exposure, hardship, exhaustion—just when you want them least. Headache, tiredness, aching limbs or bad temper may be fore-runners. When you feel these symptoms take aspirin, salts, and some extra quinine; and, if you can, take things easy. Do the same after any heavy day—even if you don't feel tired; or after a lot of wading in cold water; or after you've been much in native huts.



Salts . . .

133. When the shivers come on get under your blanket if possible and stay there till the sweat is over. A woollen undershirt is a great comfort. Don't catch a chill when the fever has passed. You'll feel better then, but a bit groggy. Coddle yourself a bit if possible.

134. The easiest and surest method of preventing attacks is to take quinine regularly, even if you feel perfectly well. Five grains per day is a minimum, taken preferably at night with the evening meal. Increase in the wet season to 5 grains morning and evening, both taken with food.

135. From the moment an attack is threatened, take 25-30 grains per day. Continue for 7 days. If you do not, you may expect attacks to recur every alternate day, or a longer period of "low fever" with danger of later consequences. If no quinine is available, but you have atebrin, take three tablets a day for 5 days, with food. It will turn your skin yellow if it is doing its job properly.

HOOKWORM

136. Infection is through the feet; the adult hookworm gets into the intestines, fastens on and sucks blood; the eggs pass out with the excreta. The tiny worms hatch out (too small to

see) and lie in damp earth. Therefore, never go barefoot; keep away from shady and mucky places near villages, and especially from native latrines. Wash and dry your feet when you can. Hookworm causes a thinning of the blood (anaemia) and great debility. You can get yourself cleared by a dose or two of the right medicine.

MINOR PESTS

137. Leeches will normally drop off when they are full. A great number on your body at once could weaken you by loss of blood, but generally speaking they do you no harm.

138. They can often be flicked off with finger and thumb, and they can be scraped off with a sharp-edged stick. But if they are thoroughly attached, don't pull them off. This leaves their jaws in your flesh and may result in sores. Touch them with a lighted cigarette or firestick, with your pipe stem (nicotine) or a pinch of salt. They loose their hold immediately.

139. Long trousers worn with puttees or gaiters or tucked into the socks are good protection. Smearing the socks with soap or treating with citronella does some good temporarily.

140. Beware of drinking water in leech-infested streams. Baby leeches (smaller than an eyelash) can get into your mouth and nasal cavities and may grow there on your good blood. This is another argument for drinking tea or, at least, boiling your water.

141. Scrub-itch is caused by a small, almost invisible red mite found in some densely vegetated country. It attacks your legs, forearms, crutch and waist. The irritation is worse than a dose of "crabs."

142. Treat by scraping off ticks with the edge of a blunt knife, pressing hard; or dab them with kerosene. Then scrub the affected areas thoroughly with strong soap and hot water. Dry; dab the reddened patches where the scrub itch mites have

been with weak lysol and water; and let it dry on. If sore and puffy next morning, rub in some sulphur ointment, but don't keep this up too long or the sulphur itself will make the skin sore. Take half a teaspoon of flowers of sulphur by the mouth, with a spoonful of jam. Flowers of sulphur sprinkled inside the socks will be absorbed by the skin and will keep itch mites away.

143. Sandflies are found usually on or near beaches or on rivers near the coast. They have the biggest bite for their size in the world. The irritation is maddening. You've got to do something. But don't scratch with your finger nails or you'll start sores. Rub with the palm of your hand. Dab the spots with lysol and water and let it dry on.



Don't scratch

144. Keep the body covered. Use a cheese-cloth mosquito net if you can bear the heat. Build a camp floor several feet above ground level. Use a smudge fire, and sleep with a bit of smoke curling over you. Natives light a fire on the hearth in the centre of the hut, and the smoke curls up and rolls back against the roof. Currents of air started by the fire keep a bit of the area nearest the ground free of smoke—the native sleeps in that.

145. Fleas are common in native houses, particularly in the mountains. If you sleep in a house, you've just got to put up with them.

146. Blowflies are sometimes troublesome. A lighted torch (e.g., of dry coconut leaves) passed through and under a native house will clear it temporarily. Where blowflies are bad keep your blankets, socks and woollens covered by day unless you want them blown. (They are safe when airing in the sun.)

147. Hair-lice are pretty well universal among natives. Keep your hair short and rub some kerosene into it.

148. Scorpions and centipedes may get into your blankets, clothes, boots or hat. (In offices look out for scorpions among the papers.) Get into the habit of looking at your clothes and boots before you get into them. The bite is very painful. Apply a drop of strong ammonia to the place, if available, better still, if anybody has a hypodermic, inject a little weak solution of baking soda into the place. You can do this and get relief as long as there is pain there. With the big black scorpion with the red tail, it is well to put on a tourniquet at once and cut into the sting mark. Release the tourniquet after 15 minutes. If the sting has not gone, repeat the dose without the tourniquet.

149. Snakes: There are plenty of snakes in New Guinea. But they are not as bad as in parts of Australia. Some are deadly; some are poisonous, without being deadly; many are harmless. You can recognise the bite of a bad snake by the two punctures made by its poison fangs. A dangerous bite may show two punctures as wide apart as the width of a finger nail ($1/3$ rd in.). If less than $\frac{1}{4}$ in. apart, the snake bite may be very painful, but is rarely dangerous to life.

150. The principal deadly snakes of New Guinea are:—

1. Death adder—short and puffy, 18 in. to 2 ft.; with short, thin, pointed 3 in. tail piece; mottled grey and yellow; one variety is black; torpid lies in sandy footpaths at night.
2. Brown snake—up to 6 ft., dull brown, active. There is one rare form much longer.
3. Tiger snake—up to 5 ft.; lateral stripes on back; active and will go for you; rare.
4. Black snake—up to 6 ft. sooty black, white or pink or red or blue belly; active.
5. Coral snake—short; up to 2 ft.; mottled; lives under water on coral reefs. Dangerous if it gets a good bite; often doesn't manage it.

151. Be very respectful of all snakes, but not scared of them. The best killer is a pliable stick, e.g., of lawyer cane.

Approach him from side on, if possible, and don't hit short. Hit him amidships first in order to break his back; smash his head afterwards. No need to strike very hard, but strike quickly.

152. The only snake you need be afraid of is the one you don't see. He bites you when you tread on him or disturb him. Keep your eye on the track; don't jump over a log; look before you leap; don't thrust your hand into dry bushes or hollow logs. If possible, carry a light when you go by night. When on the track get a native to walk in front. He will see a snake when you would not. Examine your blankets before you turn in. Good idea not to roll out your bed until you want to turn in.

153. Most bites are on the foot or ankle or hand. (1) Apply a tourniquet above the knee or the elbow at once. Every minute lost increases the danger. Use your handkerchief, your belt, a strip of bark, a tough creeper or a bundle of long grass. Twist it tight "without mercy," by means of a short stick passed through the knot, just like straining up the wires of a fence. (2) Wash off the venom with water or urine. (3) Cut deep with a sharp knife immediately through the bite, and on each side of it, and above it, or pinch up the flesh where the bite occurred and cut off. Cut in the same direction as the limb—along the limb. (4) Suck hard and spit out the blood. (5) Apply field dressing. (6) Get medical assistance if possible. After the first half-hour loosen the tourniquet for a few seconds every 20 minutes. Let it bleed again if it will. Two or three hours should be long enough. If you act smartly and vigorously no bite need be fatal.

154. Don't go out of your way to kill carpet snakes and pythons (9 ft. or longer) unless



They do no harm

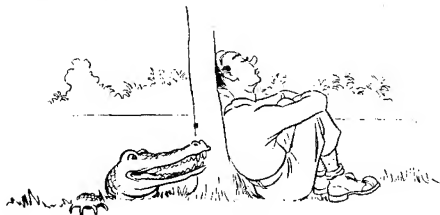
you want to eat them. They do no harm. They will keep the rats down in a house or store.

CROCODILES

155. Crocodiles are found mainly in level-flowing rivers and in lagoons. They can live in fresh or salt water. They can travel overland. They are sometimes found on sea-beaches near river mouths.

156. When crossing a crocodile-haunted river do so in company if possible; make plenty of noise and splashing. This won't attract them; it will scare them away.

157. They have been known to attack canoes by night. A lamp or fire aboard the canoe is a protection. Don't trail your hand in the water at any time. Beware of carrying a dog in a frail canoe.



Dreaming by the riverside

158. Above all do not sit dreaming by the riverside in the evening. Don't even go near it.

159. If you or your mate gets caught by a crocodile, put up a fight. Poke a stick or a

paddle into its eyes. Plenty of natives have escaped.

CLOTHING

160. Long trousers with gaiters or short puttees give protection against mosquitoes, leeches, scrub-itch, sandflies, snake-bite and scratches. Shorts (if allowed at all) should only be worn by day. Change into long trousers before dark for protection against *Anopheles* mosquitoes.

161. Woollen shirts prevent chills in the mountains. A woollen garment next to the skin is invaluable when you get an attack of fever.
162. Woollen socks are easiest on the feet. You should have two to three pairs.
163. A small towel or sweat-rag should be tucked in the belt.
164. Beware of sunstroke and sunburn. If you insist on being naked above the waist, get used to it gradually.
165. Boots should have heavy soles and light uppers. Keep the leather well greased (coachalaine or animal fat). Soles should be studded with heavy brass round-head screws. These save wear and prevent slipping. Brass is far better than iron, because iron causes the leather to rot. Put in plenty—sole, instep and heel. Rubber "sneakers" for special purposes should have corrugations to prevent slipping.

EQUIPMENT

166. Scrub knife (16 ins.; heavy end; sharp).
Pocket knife with gadgets (tin-opener, corkscrew, gouge, etc.).
Small compass. (Don't carry it among a lot of metal.)
Electric torch; wax matches in bottle; cigarette lighter and petrol.
Soap.
Iodine, adhesive tape, quinine, aspirin, chlorinators, salt tablets, tweezers.

